

CLAIMS

1. A display device, characterized by comprising:
a storing section for storing a digital data signal for controlling display; and
a display control section for performing display control on the basis of the digital data signal stored by said storing section;
provided in each dot as a minimum unit of display and arranged on a semiconductor or insulating substrate.
2. A display device, characterized by comprising:
a storing section configured by one or a plurality of storing circuits provided at each of interconnections of a plurality of write lines and a plurality of data lines correspondingly to an array pattern of a dot as a minimum unit of display so that, when a write signal is transmitted through said write line and an image signal as a digital data signal for controlling display is transmitted through said data line, the image signal is stored;
a converting section for converting a value based on a value of the image signal stored by said storing section into an analog signal; and
a display control section for performing tonal control using a liquid crystal on the basis of an analog signal converted by said converting section;
provided in each dot as a minimum unit of display and arranged on a semiconductor or insulating substrate.
3. A display device as claimed in claim 2, characterized in that said storing circuit of said storing section is configured by a static circuit.
4. A display device as claimed in claim 2 or 3, characterized in that said converting section pulse-width-modulates the value based on the image signal to convert the value into the analog signal.
5. A display device as claimed in claim 2 or 3, characterized in that

5UB A17

said converting section converts the value based on the image signal into the analog signal modulated to a pulse width based on a γ -characteristic.

6. A display device as claimed in claim 2 or 3, characterized in that said converting section performs conversion into the analog signal at a constant period interval.

7. A display device as claimed in claim 6, characterized in that a duration that no conversion into the analog signal is made is provided in the constant period.

8. A display device as claimed in claim 7, characterized in that each converting section is different in a start time of the constant period, and the period and the duration no conversion into the analog signal is made is different.

9. A display device as claimed in claim 6, characterized in that an alternating current drive voltage corresponding to the constant period is applied to said display control section.

10. A display device as claimed in claim 9, characterized in that the alternating current drive voltage is a voltage driven at $V_{COM} \pm V_a$ with respect to a reference voltage V_{COM} .

11. A display device as claimed in claim 9, characterized in that the alternating current drive voltage is a voltage alternating-current-inversion-driven by two voltage-applying lines laid correspondingly to said dot array pattern.

12. A display device as claimed in claim 9, characterized in that a plurality of rows of said dot array are provided by groups, and rows in pair are set in each of the groups to invert a phase of the alternating current drive voltage applied.

5UB x2

13. A display device as claimed in claim 2 or 3, characterized in that said display control section controls light emission of current-driven

SUBA2 → luminescent devices in connection on the basis of the analog signal in place of performing tonal control using a liquid crystal, thereby effecting tonal control.

14. A display device, characterized by comprising:

a storing section configured by one or a plurality of storing circuits provided at each of interconnections of a plurality of write lines and a plurality of data lines correspondingly to an array pattern of a dot as a minimum unit of display so that, when a write signal is transmitted through said write line and an image signal as a digital data signal for controlling display is transmitted through said data line, the image signal is stored;

one or a plurality of active devices provided respectively connected to said storing circuits of said storing section and current-driven luminescent devices having areas corresponding to place values represented by image signals stored in said storing circuits, a display control section provided in each dot to control emission of light of said current-driven luminescent devices on the basis of the values of the image signals stored in said storing circuits, and these are arranged on a semiconductor or insulating substrate.

15. A display device as claimed in claim 13 or 14, characterized in that said current-driven luminescent devices are structured by EL devices.

16. A display device as claimed in claim 13 or 14, characterized in that said current-driven luminescent devices are structured by organic EL devices.

17. A display device, characterized by comprising:

a storing section configured by one or a plurality of storing circuits provided at each of interconnections of a plurality of write lines and a plurality of data lines correspondingly to an array pattern of a dot as a minimum unit of display so that, when a write signal is transmitted through said write line and an image signal as a digital data signal for controlling display is

transmitted through said data line, the image signal is stored;

one or a plurality of active devices provided respectively connected to said storing circuits of said storing section and liquid crystal driving sections having areas corresponding to place values represented by image signals stored in said storing circuits, a display control section provided in each dot to perform tonal control using a liquid crystal on the basis of the values of the image signals stored in said storing circuits, and these are arranged on a semiconductor or insulating substrate.

SUB A4 → 18. A display device as claimed in any of claims 2, 3, 14 and 17, characterized by further laying a plurality of read lines correspondingly to said dot array pattern so that, if a read signal is transmitted, the image signals stored in said storing circuits are read out of said storing section.

19. A display device, characterized by comprising:

a display drive section having a plurality of word lines, a plurality of write lines and a plurality of data lines laid correspondingly to an array pattern of a dot as a minimum unit of display, and a display control section operating, when at least a write signal is transmitted through said write lines and the image signals are transmitted through said data lines, on the basis of said storing section for storing the image signals, the image signals and a word signal transmitted through said word lines, provided in each of the dot array patterns;

a word line driver section for controlling transmission of a word signal to said word lines;

a row decoder section for selecting a row for transmitting a write signal to said write lines, to transmit the write signal to a selected row;

a column decoder section for selecting said data line;

a column selection switch section for transmitting the image signals as

data signals for controlling display to said data line selected by said column decoder section;

integrated and integrally formed on a semiconductor or insulating substrate.

20. A display device as claimed in claim 19, characterized in that a converting section for converting a value based on the image signals stored in said storing section into an analog signal is provided in each dot array pattern in said display drive section, and said display control section operates on the basis of the analog signal and the word signal.

21. A display device as claimed in claim 19, characterized in that said word lines are laid to transmit the word signal to said display control section on two rows.

22. A display device as claimed in claim 19 or 20, characterized in that said word line driver section and said row decoder section are allocated correspondingly to a length of said display drive section in a column direction, and said column decoder section and said column selection switch section are allocated correspondingly to a length of said display drive section in a row direction.

23. A display device as claimed in claim 19, characterized in that each column selection switch structuring said column selection switch section is allocated correspondingly to a width of said dot array pattern.

24. A display device as claimed in claim 19 or 20, characterized in that said row decoder section selects a row for transmitting the write signal on the basis of an address signal representing a storage position.

25. A display device as claimed in claim 23, characterized in that said column decoder section selects said data lines on the basis of the address signal.

26. A display device as claimed in claim 25, characterized in that three

dots for developing and displaying in red, blue and green as light source colors are provided as one pixel, the image signals are inputted on a one-pixel-unit basis, and said column decoder section selects data lines for storing the image signals in an amount of one pixel.

27. A display device as claimed in claim 25, characterized in that three dots for developing and displaying in red, blue and green as light source colors are provided as one pixel, the image signals are inputted on a plural-pixel-unit basis, and said column decoder section selects data lines for storing the image signals in an amount of a plurality of pixels.

28. A display device as claimed in claim 19, characterized by further comprising:

a timing controller section for controlling at least timing of transmitting the address signal;

a memory controller section for controlling transmission of the image signals;

further integrated and integrally formed on said substrate.

